



Uranium Mobility in Groundwater at the 300 Area of the Hanford Site

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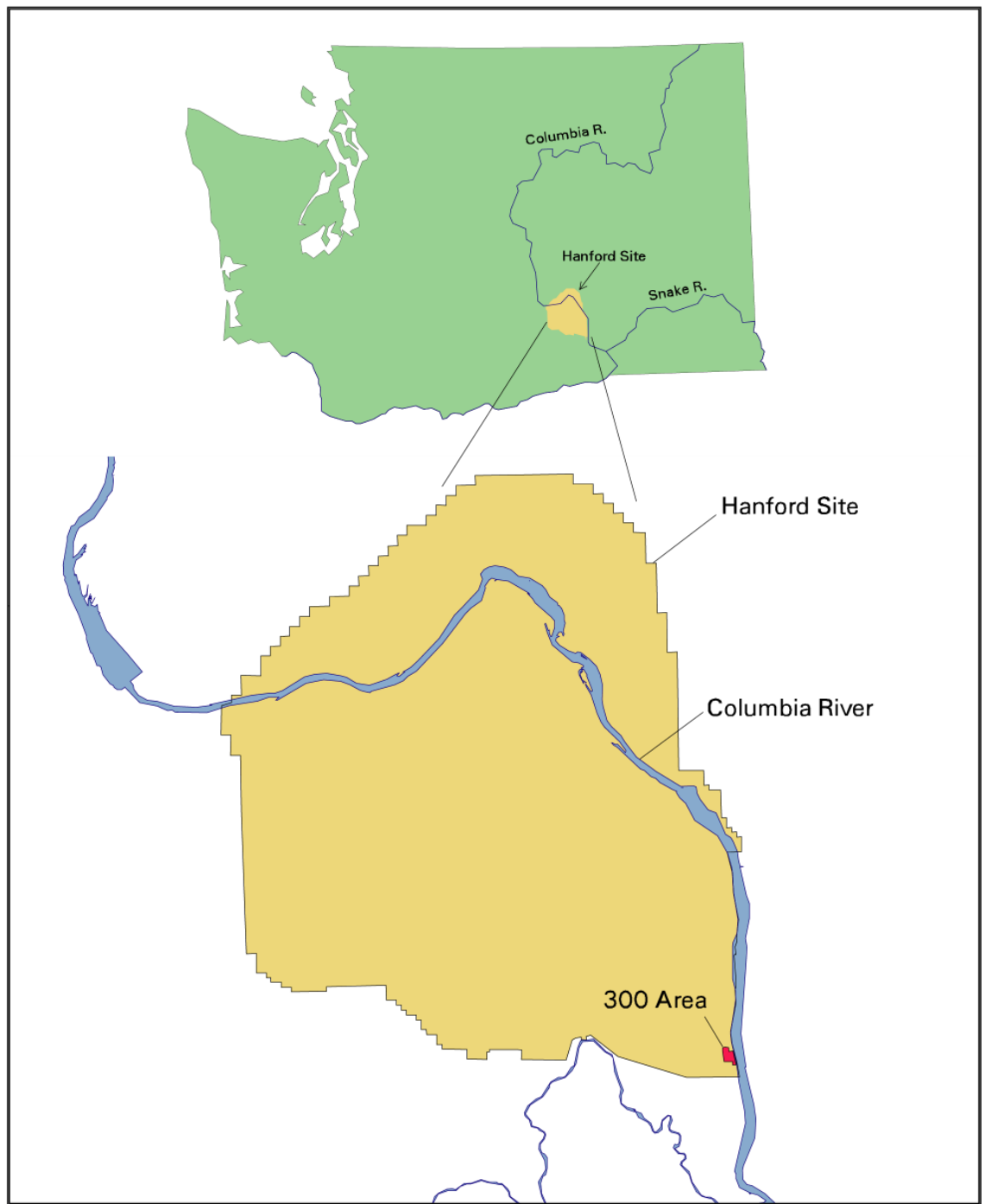
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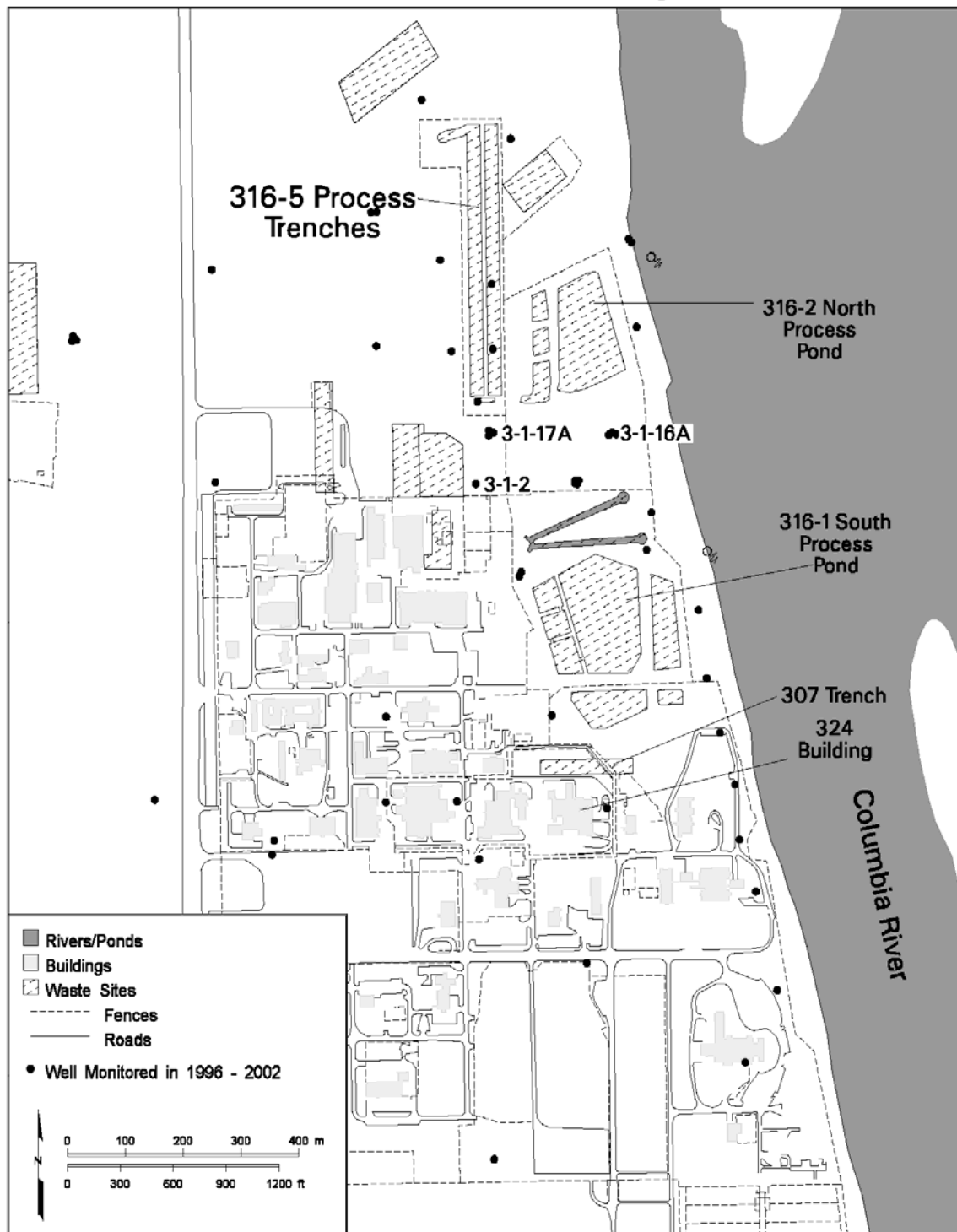
Hanford Site and 300 Area Location Map



can_lindberg00_13 October 11, 2000 9:14 AM

Location of Wells and Liquid Waste Facilities

300 Area Groundwater Monitoring Wells



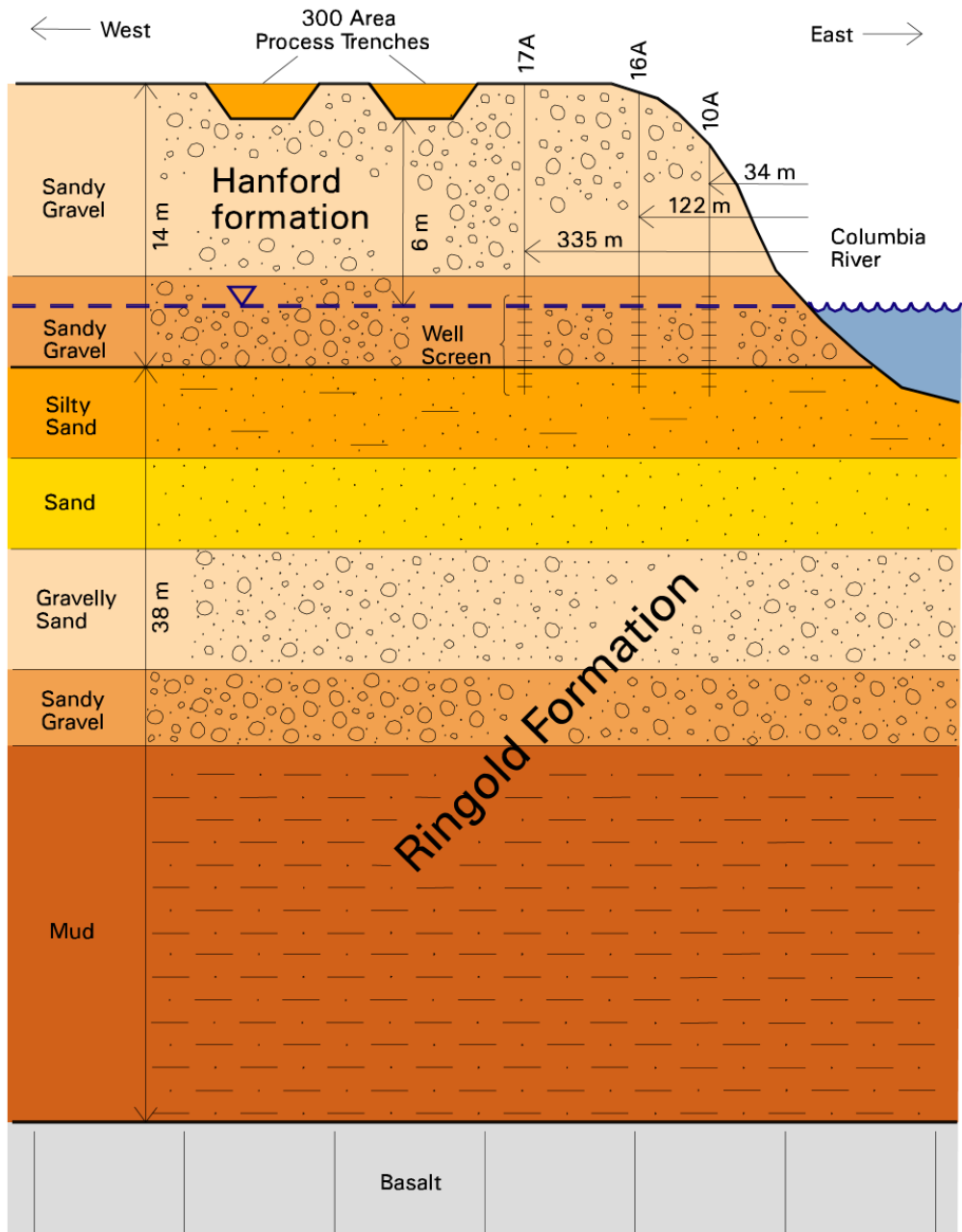
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300 Area Photograph



Geologic Cross-Section

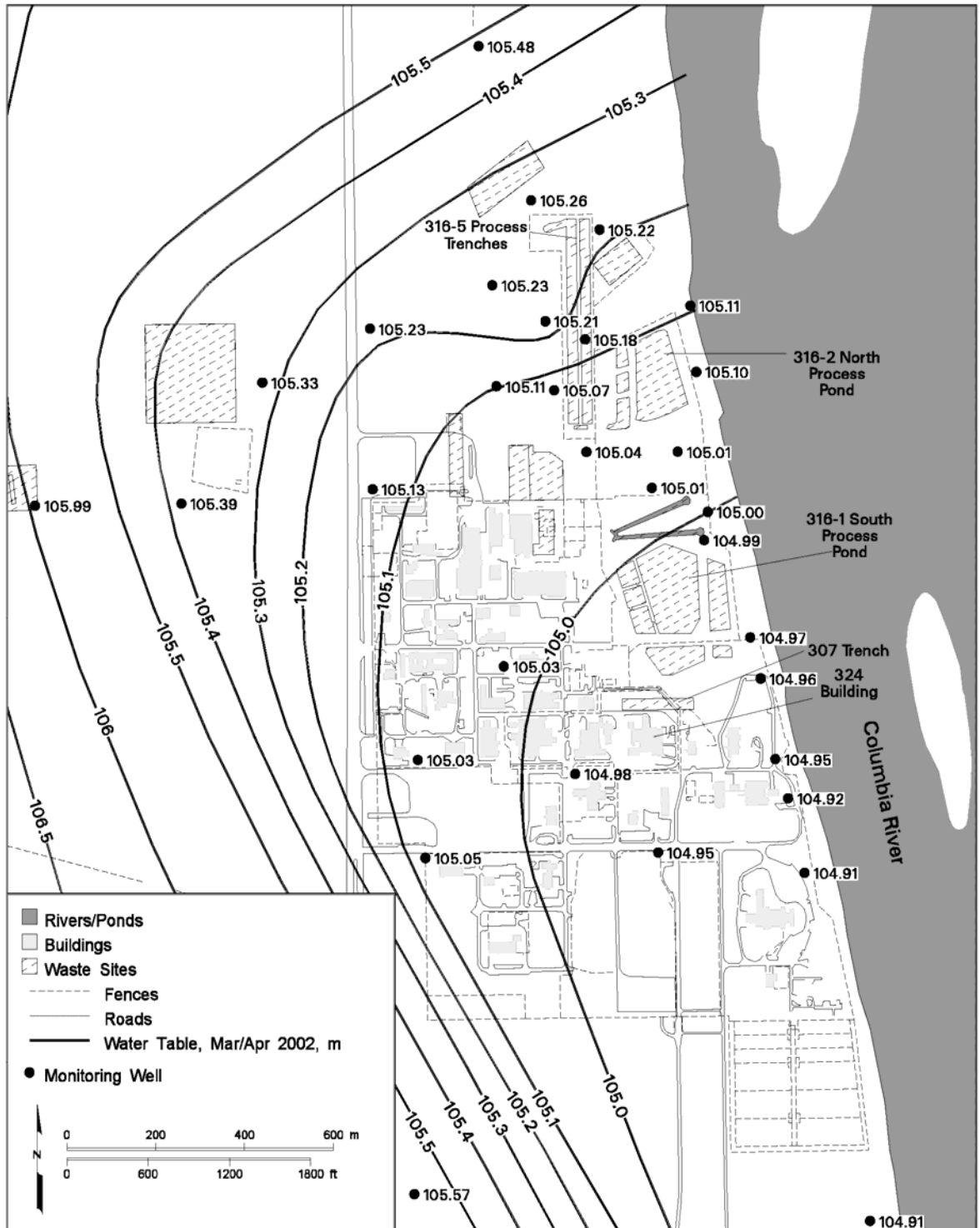
East-West Geologic Cross-Section at 300 Area Process Trenches



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Water Table Map (Low to Normal River Stage)

300 Area Water Table, March 2002



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Water Table Map (High River Stage)

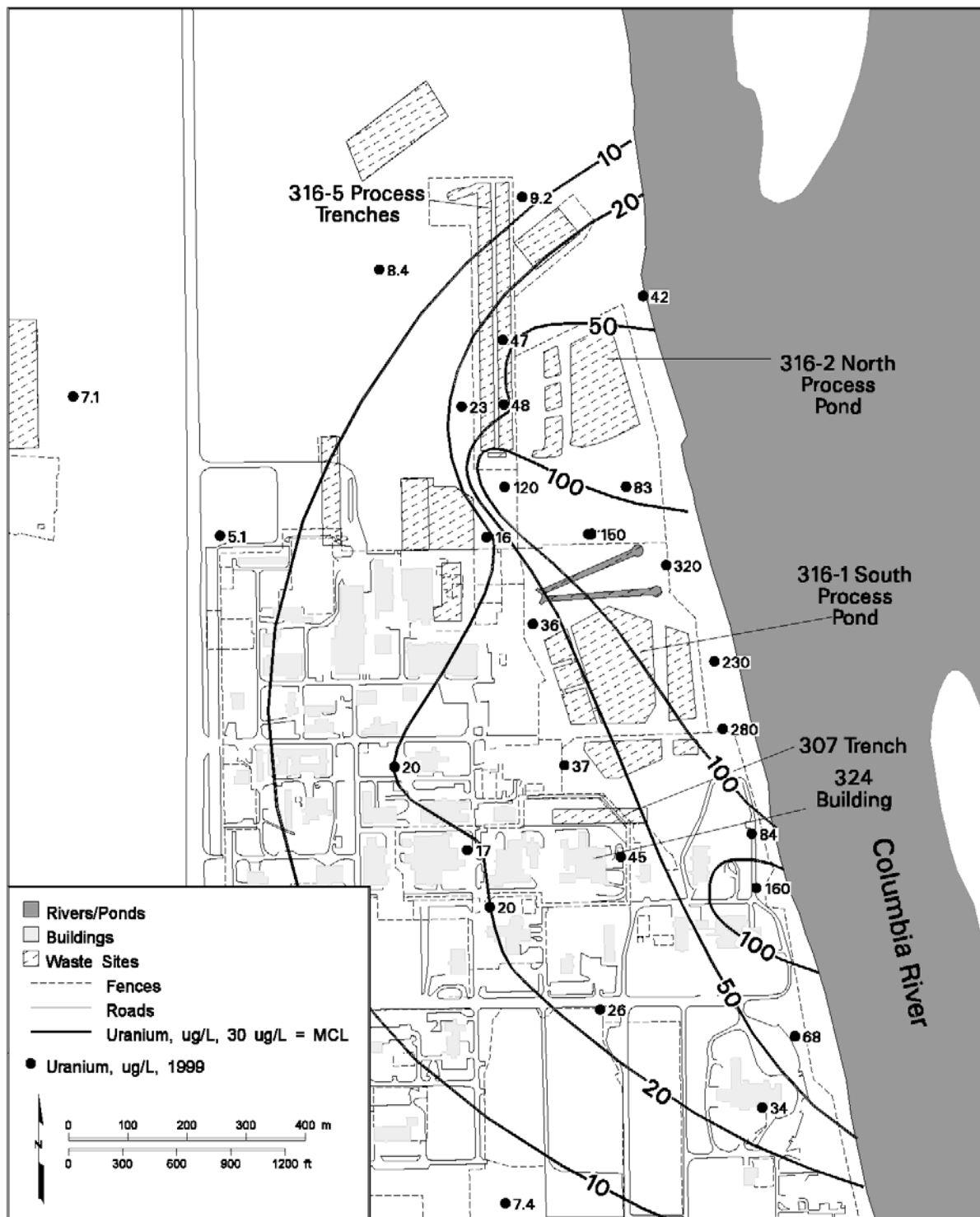
Water-Table Map
June 1995



jpm2000_25 October 10, 2000 9:48 AM

Uranium Plume Map - Low to Normal River Stage

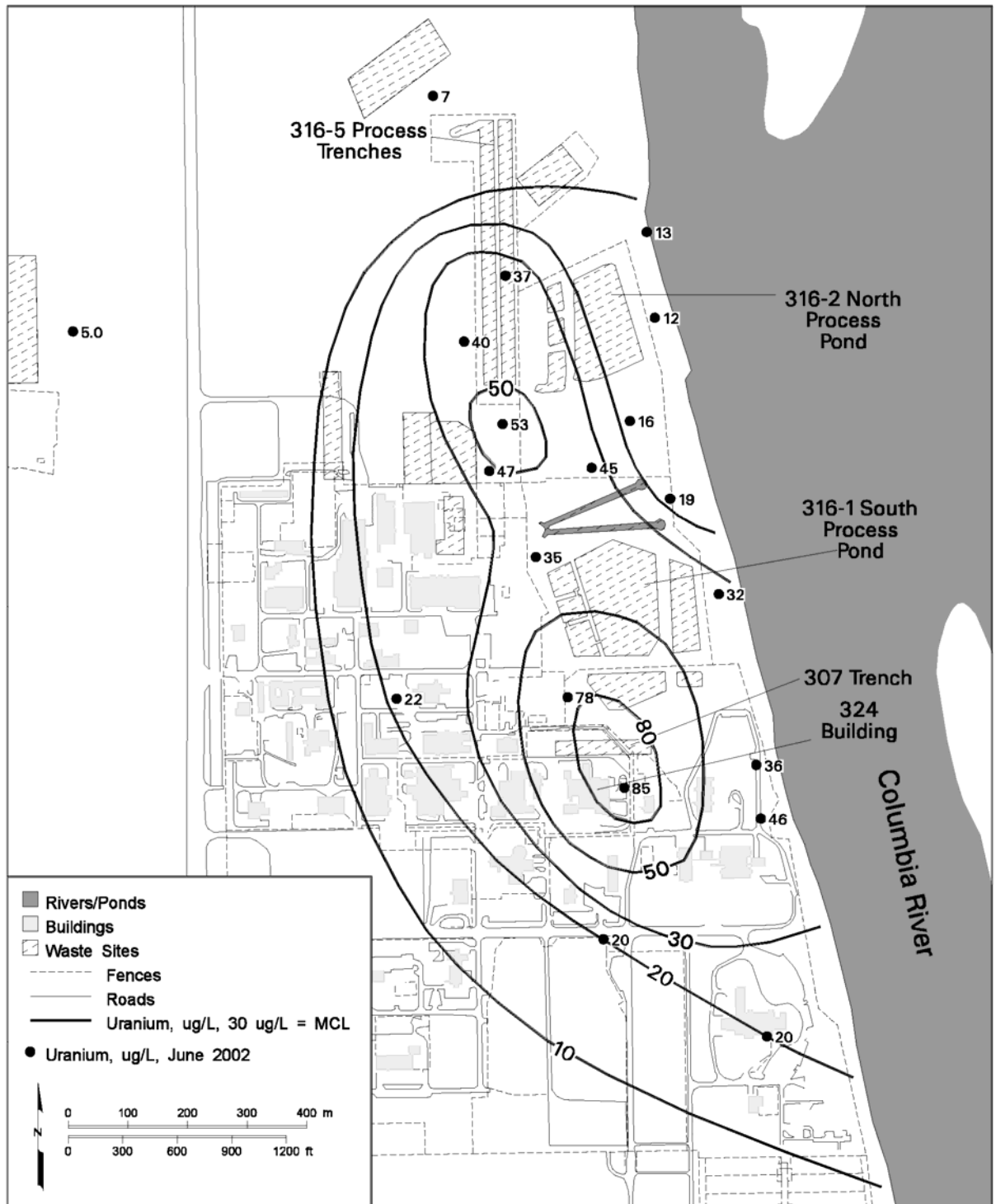
300 Area Uranium Contours for FY1999



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Uranium Plume Map High River Stage

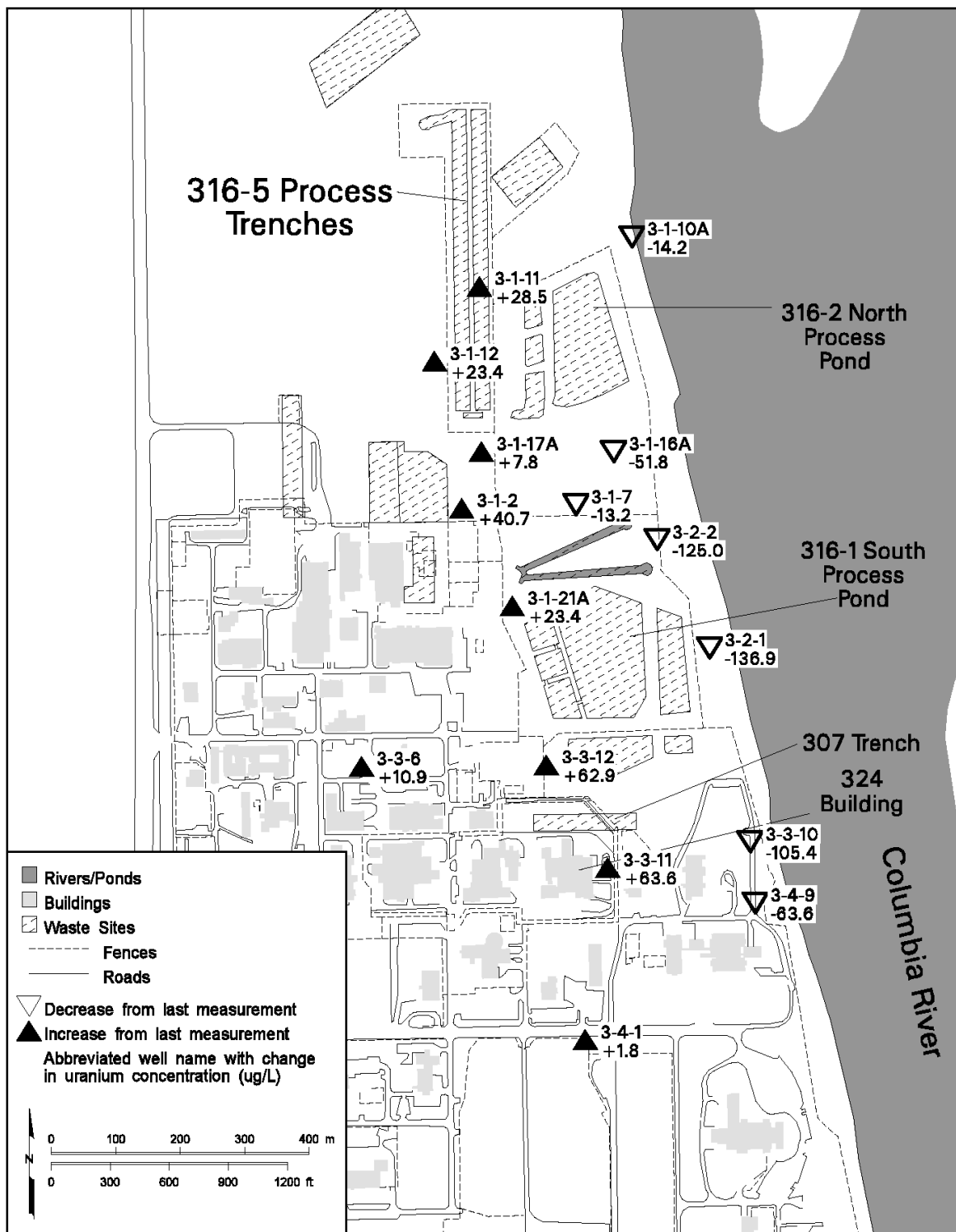
300 Area Uranium, June 2002



can_lind03_26 March 20, 2003 10:36 AM

Change in Uranium Concentration

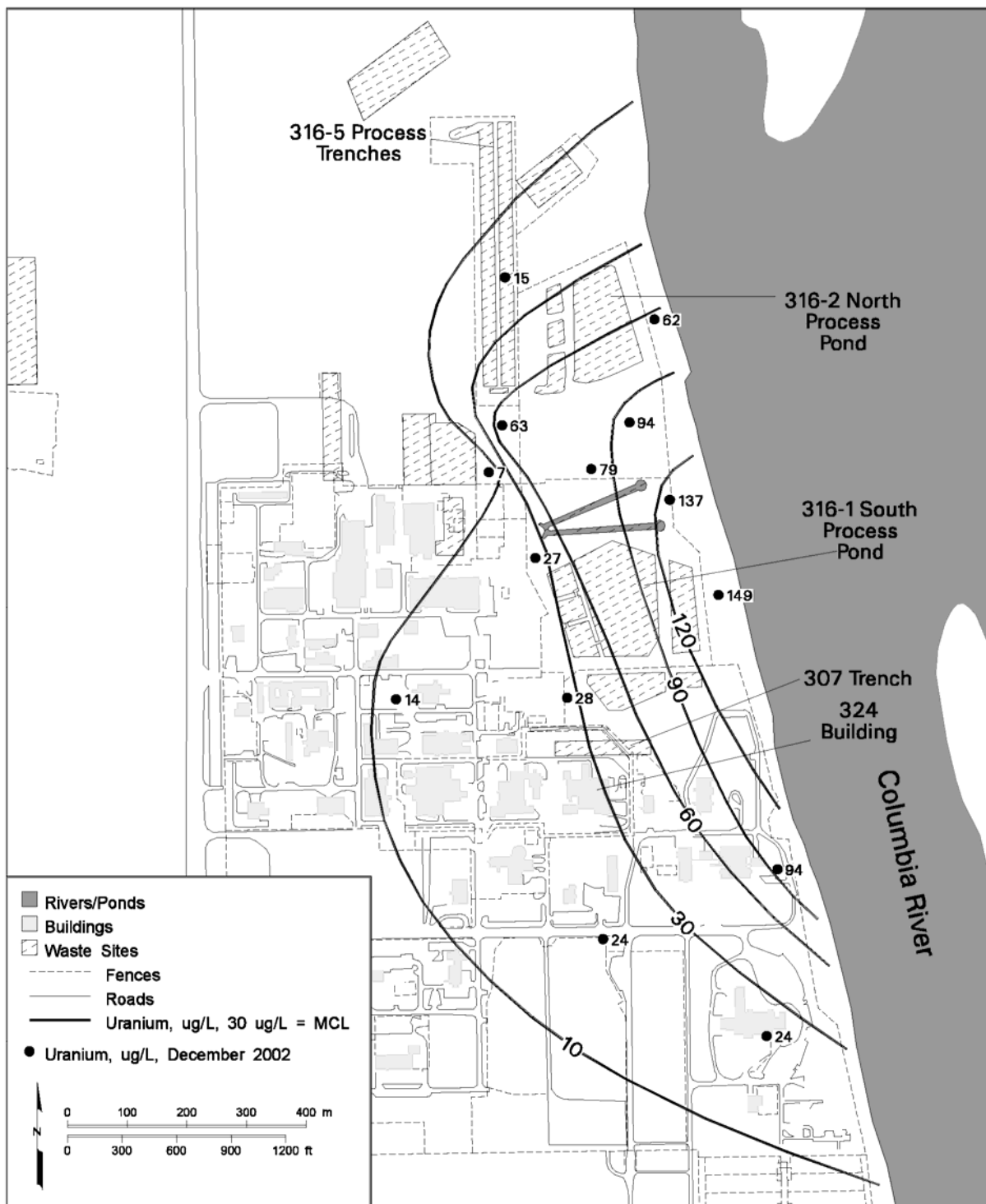
Change in Uranium Concentration between June 2002 and Previous Sampling



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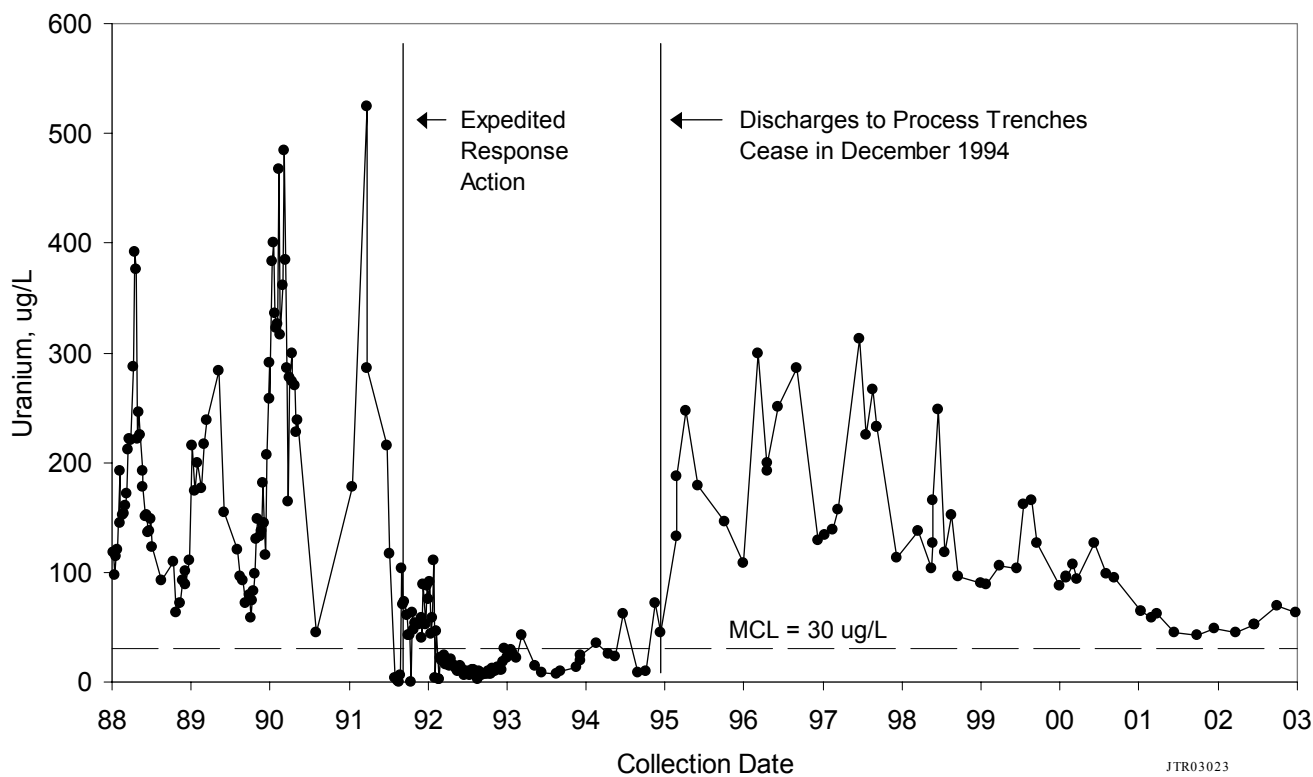
Uranium Plume Map - Low to Normal River Stage

300 Area Uranium, December 2002



can_lind03_29 March 20, 2003 10:36 AM

Well 399-1-17A Uranium Trend Plot Process Trenches Discharge History



JTR03023

***300 Area Uranium Leach and
Adsorption Study
Serne, et al., PNNL-14022 (Nov. 2002)***

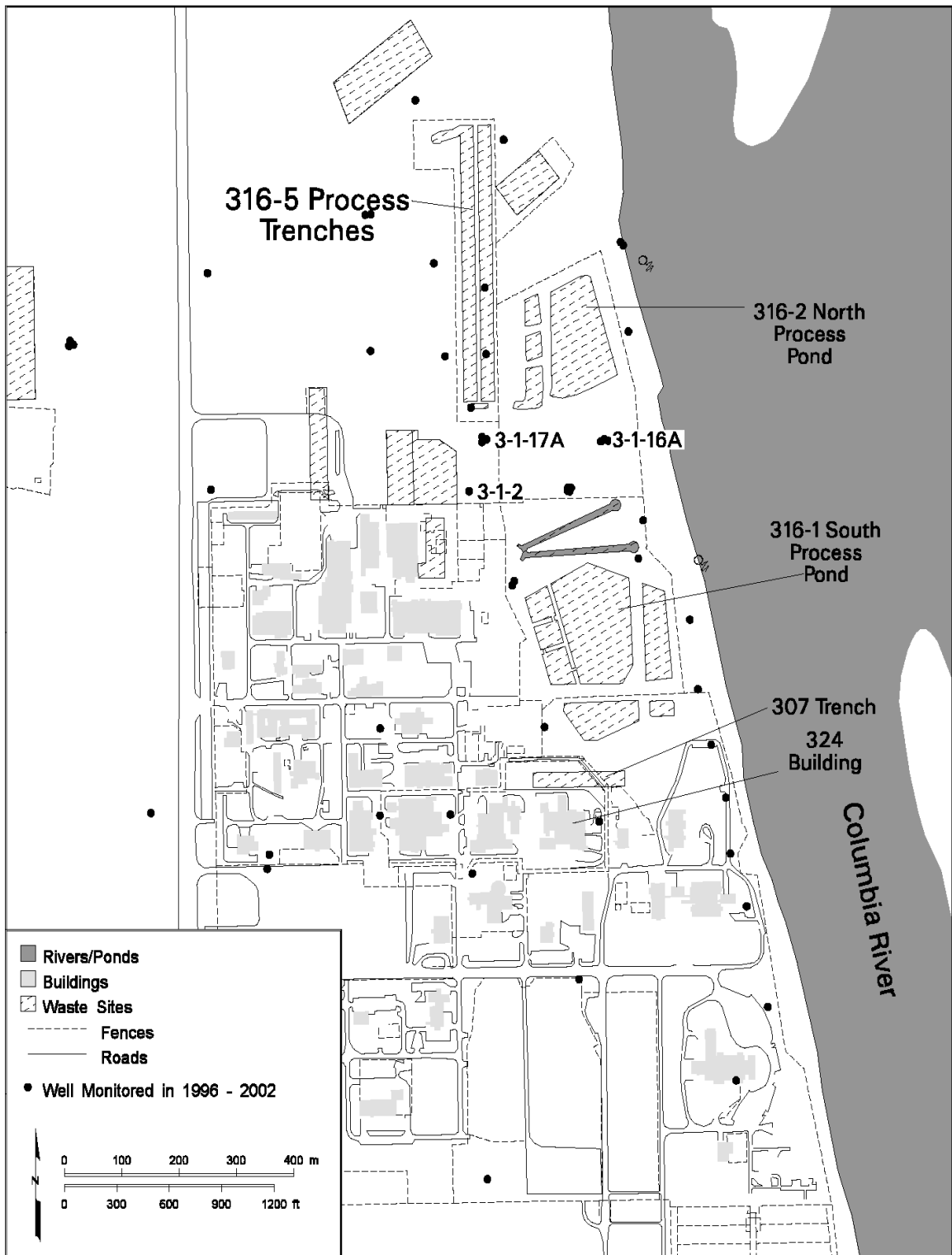
Results of Adsorption Tests

- ▶ **K_d values ranged from 0 to 100 mL/g depending on solution tested.**
 - **Total inorganic carbon (e.g., CO_3) had greatest impact.**
 - **pH important too, but in field highly buffered.**

- ▶ **Predicted K_d values:**
 - **2 to 4 mL/g for full-strength groundwater**
 - **7 mL/g or higher for groundwater mixed with river water.**

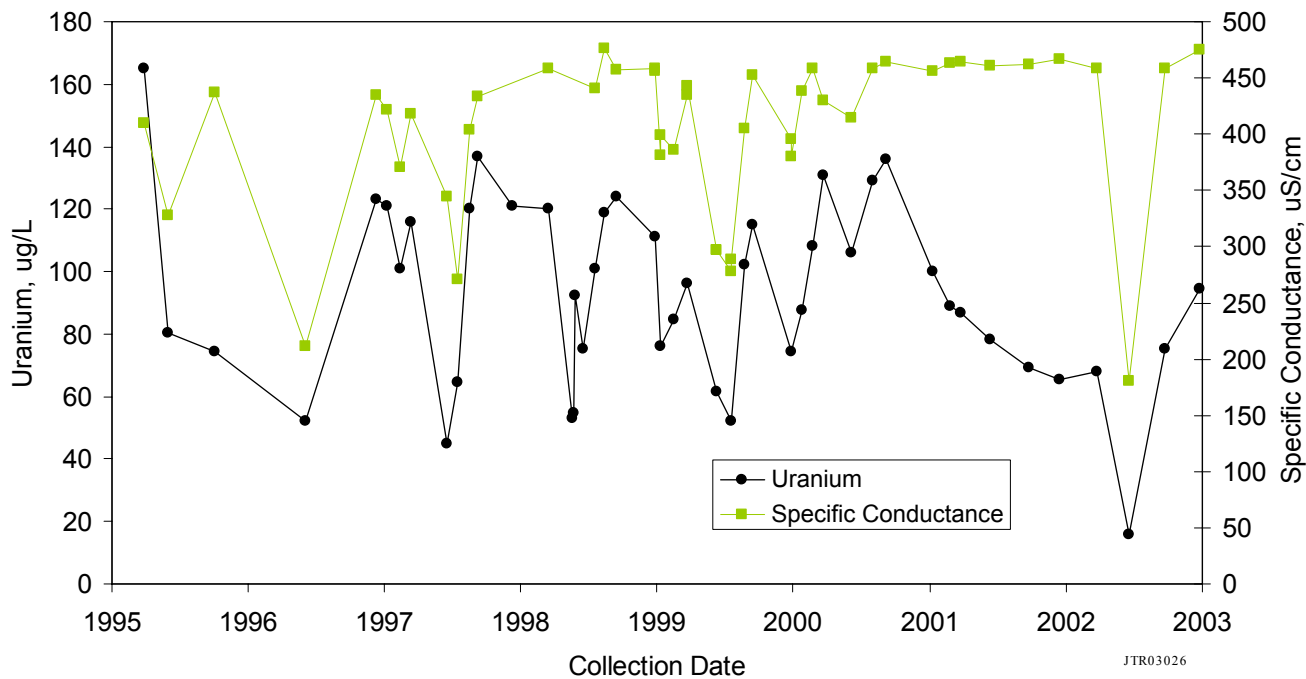
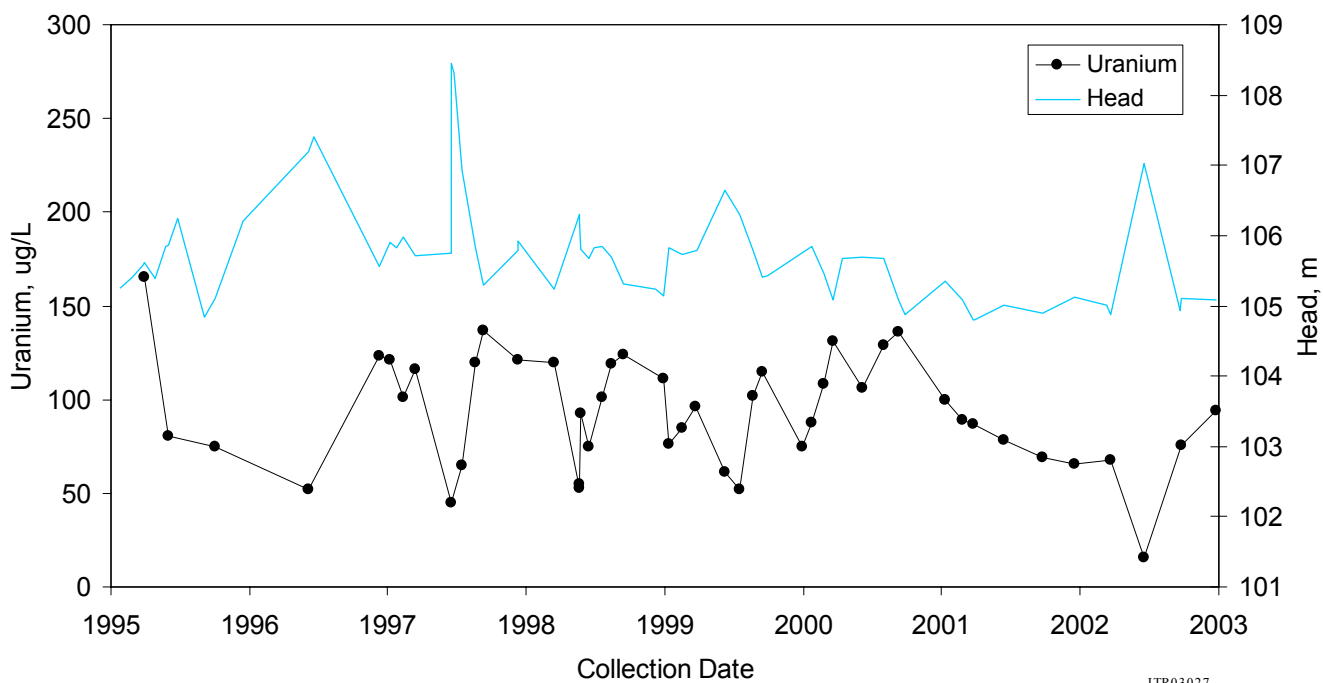
Well Location Map

300 Area Groundwater Monitoring Wells



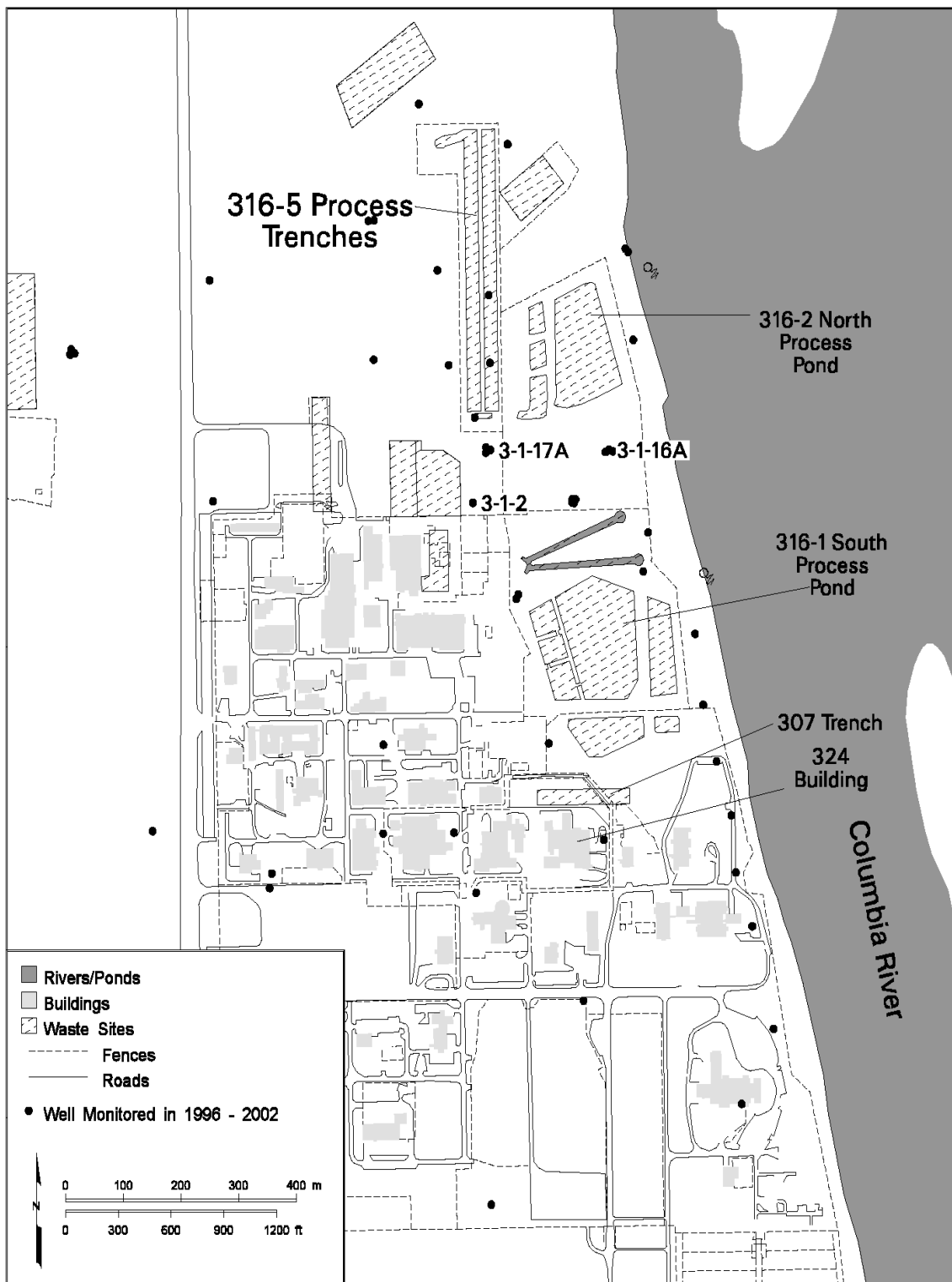
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Well 399-1-16A



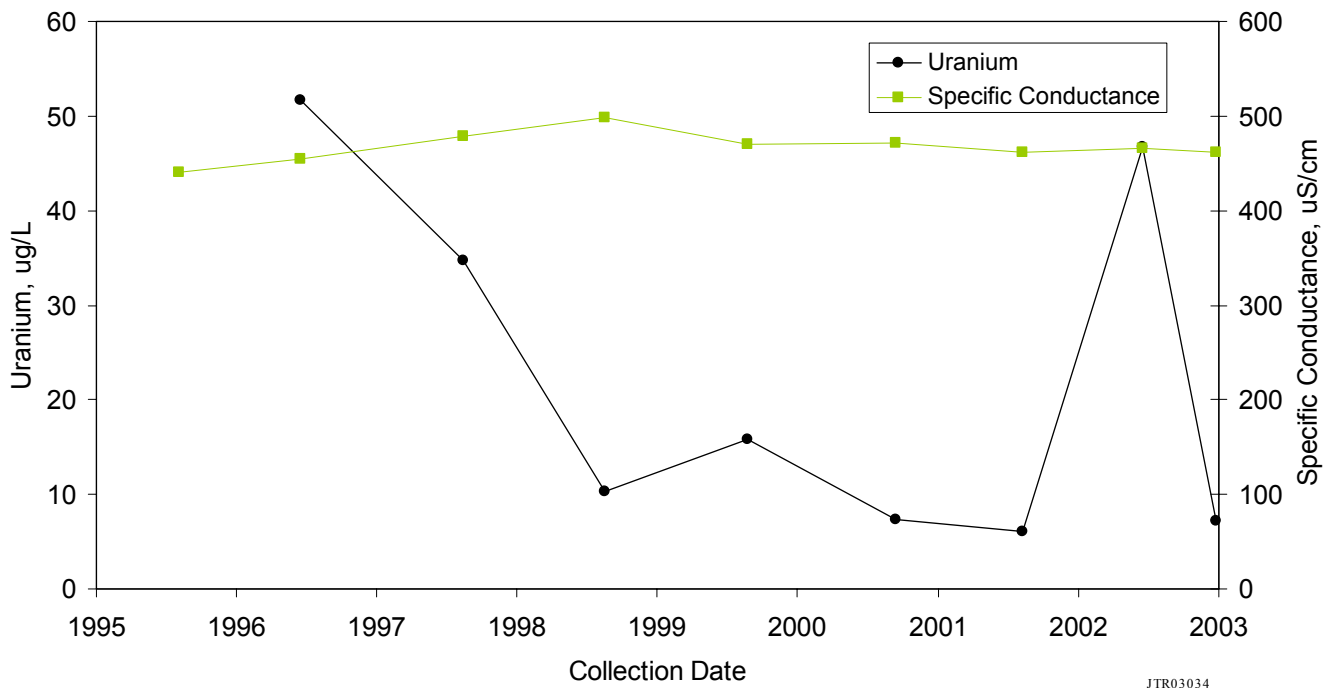
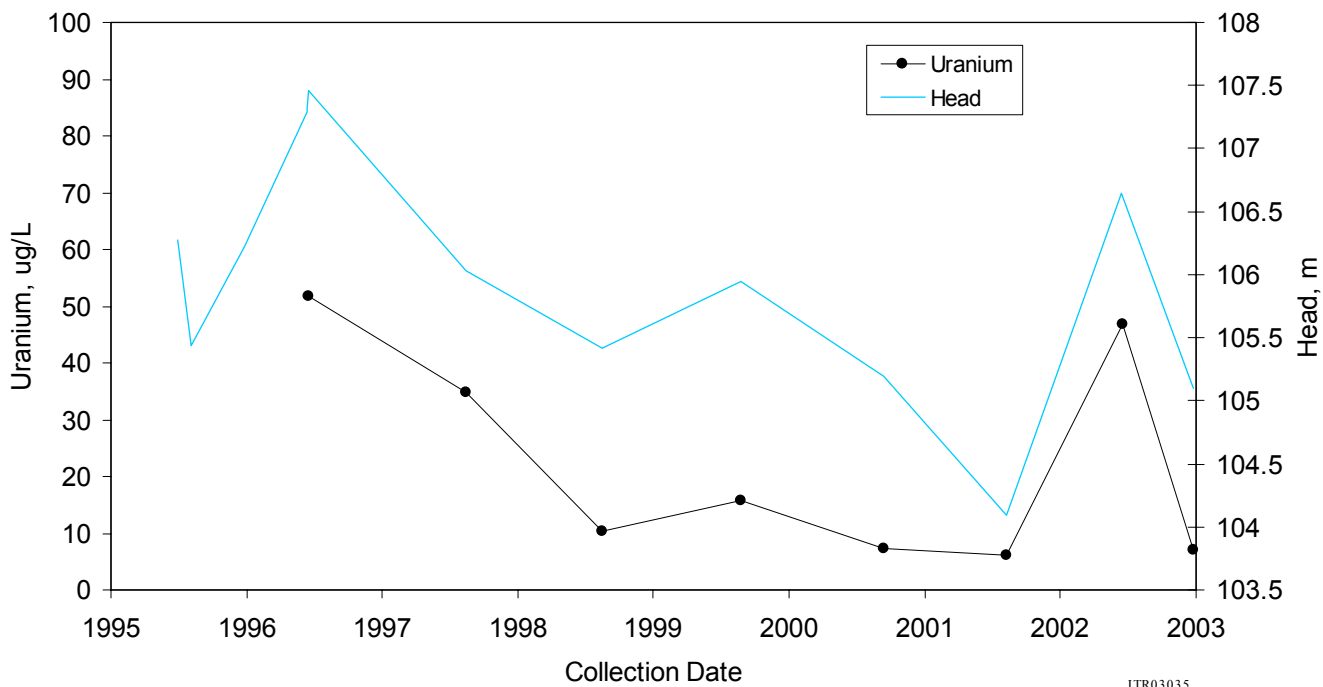
Well Location Map

300 Area Groundwater Monitoring Wells

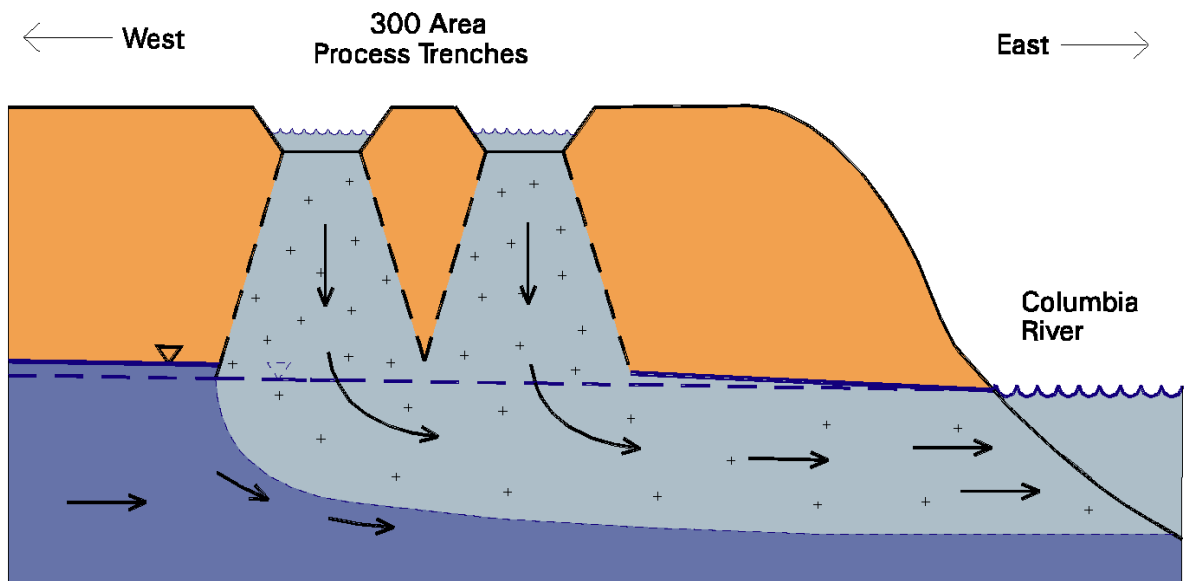


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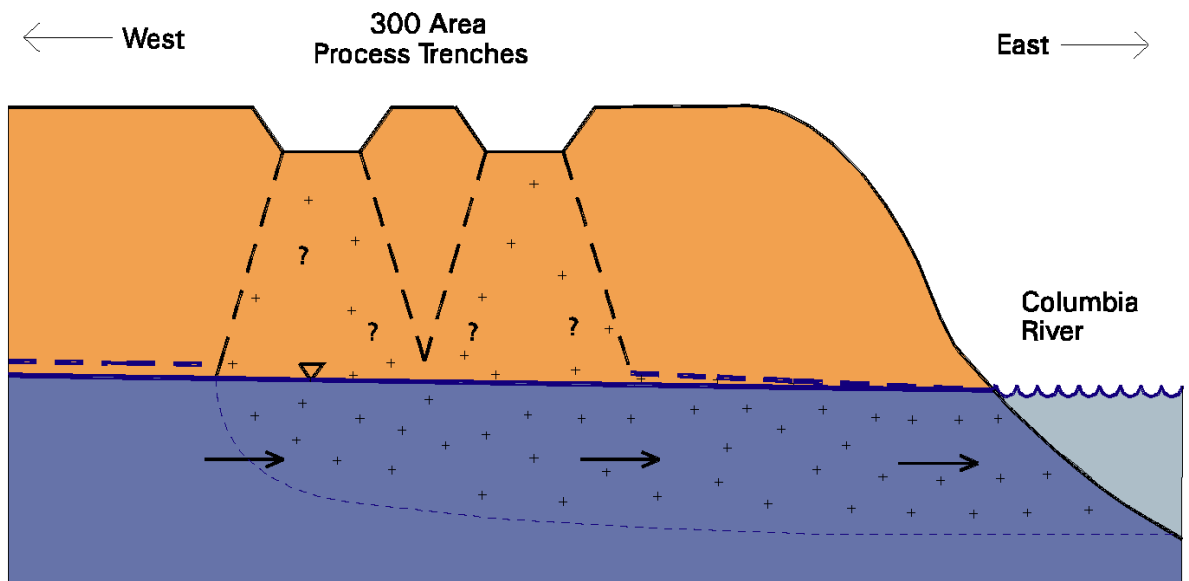
Well 399-1-2



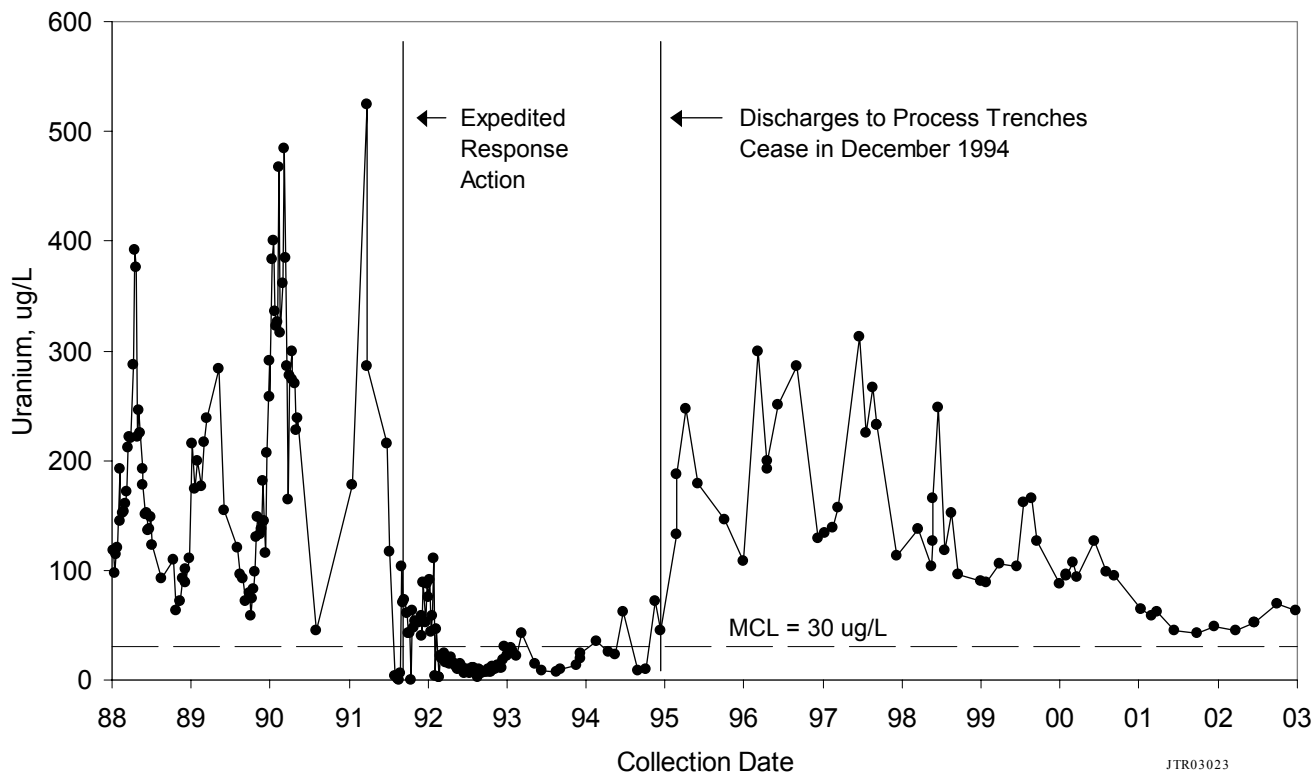
During Trench Use



After Trench Operation Ceased

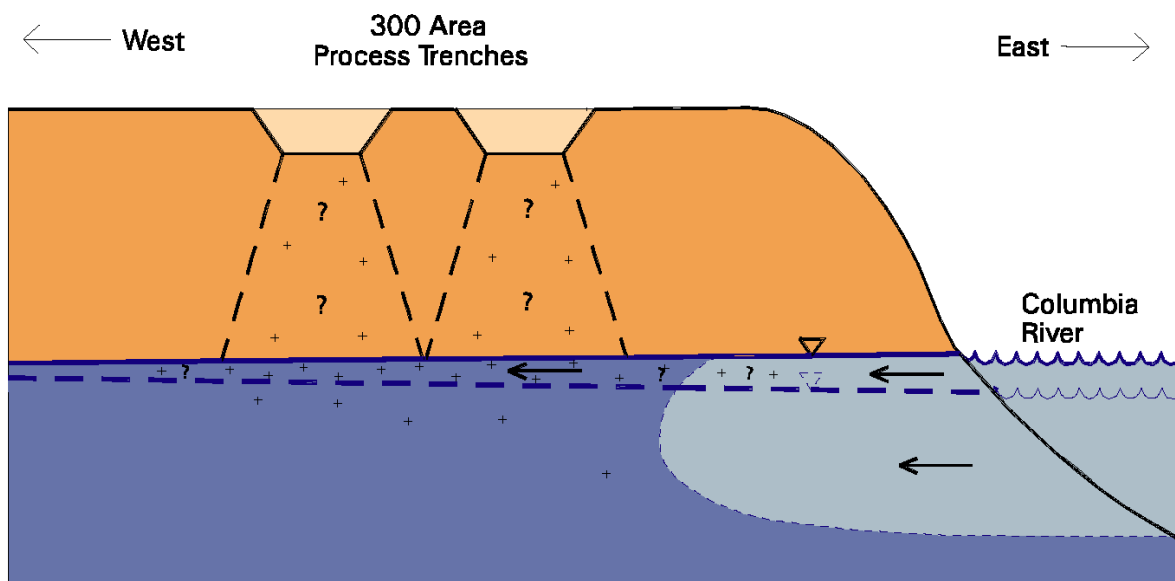


Well 399-1-17A



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Recent High River Stage



Remaining Concerns

- ▶ **What is the original source of the uranium in the groundwater?**
 - Is the U in groundwater from percolation from near-surface or from already dissolved U in the original wastewater?
- ▶ **Fate and Transport**
 - How does the U in the deeper vadose zone leach with contact with “recharge” water?
- ▶ **What is the “speciation” of the U bound to solids?**
 - Is the adsorbed U in the aquifer the same form as was found in the near-surface sediments?
- ▶ **Vadose Zone Pore Water**
 - What is the composition of vadose zone pore water and what is the U speciation in vadose zone pore water?